Lab 2

Research Methodology – Quantitative

In this R Lab the student is required to manipulate and transform the data set described in Table 1 (*Comparing 10 different smartphones*). For additional details see the corresponding slides (*Descriptive statistics*).

Name	Length	Width	Weight	Build	Display type	Press.-sens. displ.	RAM	Attractiveness
Pixel XL	155	76	168	Alumin	Amoled	No	4GB	Appreciable
Pixel	144	70	143	Alumin	Amoled	No	4GB	Modest
7 Plus	158	78	188	Alumin	IPS	Yes	4GB	High
iPhone 7	138	67	138	Alumin	IPS	Yes	2GB	High
LG V20	160	78	174	Alumin	IPS	No	4GB	Modest
S7 edge	151	73	157	Alumin-Gl	Amoled	No	4GB	High
GS7	142	70	152	Alumin-Gl	Amoled	No	4GB	High
HTC 10	146	72	161	Alumin	IPS	No	4GB	Appreciable
OnePlus	153	75	158	Alumin	Amoled	No	6GB	Poor
Moto Z	153	75	136	Alumin-St	Amoled	No	4GB	Sufficient

Table 1. Content of the smartphone data set

Exercise 1.1 Use a spreadsheet software (e.g., Excel, Calc) to construct the tabular representation reported above. Next save it as a .csv file, and finally load it in the R environment. **Hint:** while constructing the tabular representation in the spreadsheet software use the first row of the spreadsheet to report the names of the variables.

Exercise 1.2 Assign to the variables Build, Display, and PressDispl a factorial (categorical) representation by using the appropriate R function.

Exercise 1.3 Assign to the variables RAM and Attractiveness an ordinal representation using the appropriate R function.

Exercise 1.4 Construct and show the values of the contingency table obtained on the basis of the categorical variables Build (represented in the rows of the table) and Display (represented in the columns of the table). By using the same contingency table derive a) the corresponding proportion table b) the observed conditional probability table P(Build|Display).

Exercise 1.5 Summarize the content of the sub-dataframe composed by the quantitative variables Length, Width, and Weight.

Exercise 1.6 Compute the correlation values between a) Length and Width b) Length and Weight c) Width and Weight.

Exercise 1.7 Derive the ranges for each quantitative variable (Length, Width, and Weight) by considering only those smartphones that are aluminum-based.